Galemys, 30: 31-36, 2018
ISSN 1137-8700
e-ISSN 2254-8408
DOI: 10.7325/Galemys.2018.A3

New old news on the "Lobo cerval" (*Lynx lynx*?) in NE Spain

Nuevas referencias antiguas sobre el lobo cerval (¿*Lynx lynx*?) en el NE de España

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Abstract

There is growing evidence that two Lynx species were present in Spain until recent times: the Iberian lynx (*Lynx pardinus*) in Mediterranean areas and the Eurasian lynx (*Lynx lynx*) in the Atlantic and Alpine ones. The recent presence of the Eurasian lynx is mainly deduced from stories and news about fierce animals known as "lobos cervales" or "tigres", these being dangerous beasts for livestock, a condition that is difficult to associate with the Iberian lynx. In this work, we provide new records of lynx in NE Iberian Peninsula that blur the geographic boundaries between both species. The contact between the Iberian and Eurasian lynxes could explain the signs of hybridization detected between them.
Keywords: Distribution, Eurasian lynx, Iberian lynx, Spain.

Resumen

Hay evidencias crecientes de que en España habitaron hasta hace relativamente poco dos especies de linces, el ibérico (*Lynx pardinus*) en ambientes mediterráneos y el boreal (*Lynx lynx*) en los atlánticos y alpinos. La presencia del lince boreal en épocas recientes se deduce fundamentalmente de relatos y noticias sobre fieras denominadas "lobos cervales", "tigres", bestias peligrosas para el ganado, condición ésta no asociada a los linces ibéricos. En este trabajo se recopilan nuevas noticias sobre presencia de linces en el cuadrante noreste de la península Ibérica que desdibujan los límites geográficos entre ambas especies. El contacto entre el lince ibérico y boreal podría justificar los indicios de hibridación detectados entre ambas especies.
Palabras claves: Distribución, España, lince ibérico, lince boreal.

Introduction

The information on the presence of the Eurasian lynx *Lynx lynx,* (Linnaeus, 1758) in northern Iberian Peninsula has always been confusing and controversial. Assuming a past Iberian distribution, the species would have gone extinct before most Iberian zoologists had started their work. The stories and references concerning the Eurasian lynx could have been easily assigned by zoologist that did not know the species to the extant Iberian lynx *Lynx pardinus* (Temminck, 1827), introducing additional complexities to the description of the historical distributions of the two European lynx species.

The writings of the early Spanish naturalists usually assume the presence of two or more types of lynx in the Iberian Peninsula. Francisco Hernández produced a commented Spanish translation of Pliny the Second's Natural History (the manuscript, dated before 1587, is kept in the Spanish National Library) that mentions up to three types of "cats": horseshoe cat (*gato de herradura*), nail cat (*gato clavo*) and little-ant cat (*gato de hormiguilla*), which

could correspond, in our opinion, to the Eurasian lynx, the Iberian lynx and the common genet (*Genetta genetta*), respectively (Hernández 1976). Funes (1621) and Huerta (1624) talk about two different lynx species, although apparently they had no personal experience with them and simply reproduce the opinions of classical authors (such as Oppian). Sarmiento (1760) wrote that the *lobos cervales* killed in northern Spain (arguably Eurasian lynx), were "more hefty and ferocious" than the *gatos clavo* (arguably Iberian lynxes) hunted in southern Spain. This two-species view was incorporated in the works of the first Spanish mammalogists, but was progressively lost. López Seoane (1861-1863) reports the existence of *Felis lynx* in Galicia (NW Spain), where it would be extremely rare by that time, and names it as *lince* (lynx), *lobo cerval* (wolf, with the *cerval* epithet being probably related to deer – *ciervo*-) and *tigre* (tiger). For Graells (1897) there was only one lynx species in Spain, *Felis pardina*, even though he acknowledged that previous authors had informed about the existence of two species. Finally, Cabrera (1914) considered an error all previous information about the presence of two lynx species in the Iberian Peninsula, stating that *Lynx pardellus* (= *Lynx pardinus*) would be the only species present from the Pyrenees to the southern tip, although he adds that by that time it would have disappeared from the north and the east. This confusing panorama is reflected in legal texts, such as the 1903 hunting regulation (Reglamento de la Ley de Caza; Gaceta de Madrid de 9 de julio de 1903), which cited two lynx species among fierce animals (*animales fieros*): *Felix lyns* (sic) and *Felix pardina*.

Ruiz-Olmo *et al.* (1995) provided bibliographic and field information that supported the presence of *L. lynx* in the Pyrenees up to recent times. Later, Clavero & Delibes (2013) reviewed pre-20th century (1572-1897) Spanish lynx records and concluded that the Eurasian lynx had been present, at least up to the beginning of the 19th century, in the Atlantic and alpine climatic areas of the northern fringe of the Iberian Peninsula. Their interpretation of written records was later confirmed by the molecular identification as Eurasian lynx of ancient bone remains from northern Spain (Rodríguez-Varela *et al.* 2015). Clavero & Delibes (2013) described a historical distribution of the Iberian lynx mainly restricted to the southwest of the Iberian Peninsula, clearly separated from the northern historical distribution of the Eurasian lynx. Between the areas historically occupied by the two species, the authors provide a few historical records, to which they do not assign a specific identification.

This work provides new historical references to lynx in the north-eastern quadrant of Spain that had not been mentioned by Clavero & Delibes (2013). We aim at clarifying the historical presence of the genus *Lynx* in the area and we use the available information to discuss the specific identity of the mentioned animals. To do so, we reviewed historical texts (López de Guereño 1957, Zaldivar 2008, González de Viñaspre & Uribarrena 2009), geographic accounts (Suman 1802, Real Academia de la Historia 1802), historical newspaper news and other sources (e.g. local archives). Following the procedure of Clavero & Delibes (2013), we focused our search on historical documents, mainly of a non-scientific character, that mentioned the presence of *lince*, *gato* (cat) *cerval*, *gato clavo*, *lobo cerval*, *lubicán* or other Spanish names suggesting the presence of large felids, such as *tigre*, *leopardo* (leopard) or *onza* (originally, cheetah).

Results

We compiled 31 new historical lynx records, which, in general, are located in more southern and Mediterranean-climatic areas than the records reported for north-eastern Spain by Clavero & Delibes (2013) (Fig. 1).

An important amount of the new records come from the Basque Country, a pattern that was also present in the data compiled by Clavero & Delibes (2013) (see Fig. 1) and that is probably a consequence of the great search effort among historical texts and local archives made by naturalists and historians in the region. With respect to the Pyrenees, Trutat (1878) informs that *Felis lynx* is almost extinct in the area by the late 19th century, but provides a record of an individual hunted in the Paderna forest (La Maladeta, Huesca province). Already in the beginning of the 20th century Violant (1935) says that the *llop cervir* (= *llop cerver*, catalan equivalence of *lobo cerval*) is still occasionally seen in the Pallars district (Lleida province). Towards the south, we also collected new records in the northern Iberian Mountain System, in different pre-Pyrenean areas, in the Ebro River Valley and even in the Puertos de Tortosa y Beceite Mountains south of the Ebro.

Many of the new lynx records compiled for this work were generated between late-18th and early-19th centuries, coinciding with the preparation of

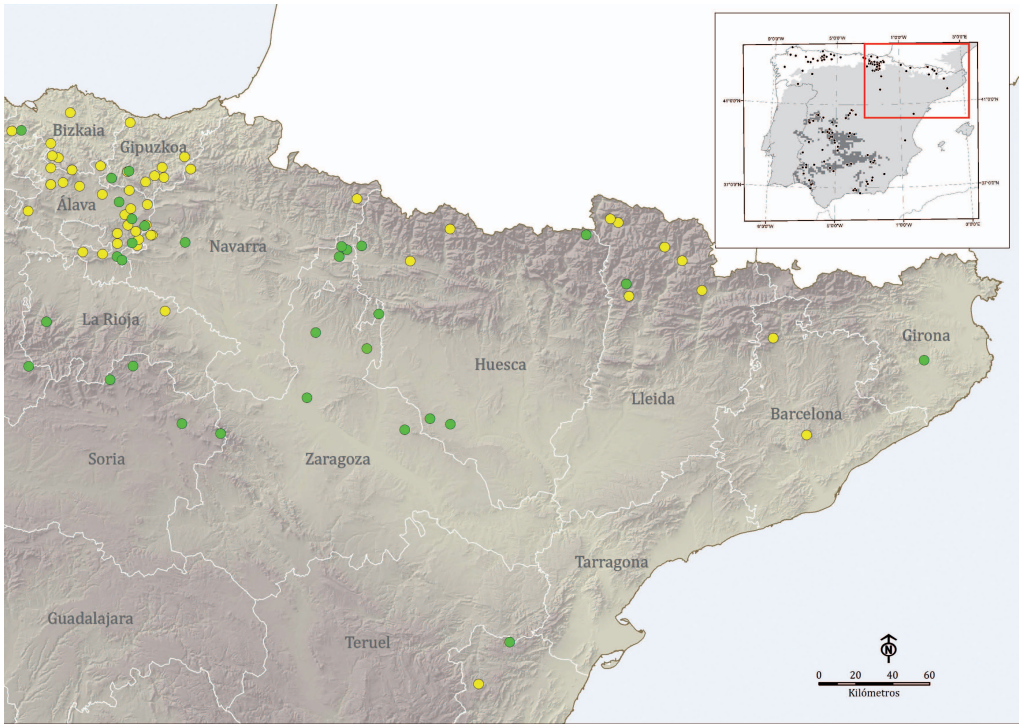

Figure 1. Lynx records in NE Spain. The small map shows pre-1900 lynx records in Spain, collected by Clavero & Delibes (2013), showing also the area enlarged in the main map. The main map represents the records of Clavero & Delibes (2013) (yellow dots) and the new ones provided by this work (green dots).

the Geographic-Historical Dictionary of Spain, led by the *Real Academia de la Historia* (Royal Academy of History). This encyclopedic work has remained in large part unpublished, with the exception of occasional and recent editions of the information concerning specific regions. The oldest of the new records (from 1572) was collected by González de Viñaspre (2009) from Bernedo (Álava Province), while some of the recent records come from Fredes (Castellón Province, 1888), Sierra del Madero (Soria, 1920), Salt (Girona, 1923), Pallars district within the Pyrenees (Lleida, 1935) and Laguna de Cameros (La Rioja, 1936).

The term most frequently used to refer to lynx among the records collected in this work was *tigre*, used particularly in the Basque Country, together with the localism *tiguere* (Table 1). The second most frequent term, and the most spread geographically, was *lobo cerval*, with variations such as *lobo cervato* in Zaragoza Province, *lobo corvato* in Soria or the Catalan version *llop cerver*. *Gato cerval*, *pantera* and the nowadays common name *lince* were rarely used in north-eastern Spain, where we could not record the term *gato clavo*, frequently used in southern Spain. The strange animal (*extraño animal*) cited in La Rioja Province (Zaldívar 2008) was not identified, but it was stated that "its fur is similar to that of the leopard or panther" (*su piel es similar a la del leopardo o pantera*), suggesting that it was indeed a lynx.

Discussion

The new old lynx records presented here offer the challenge of being assigned to one of the two lynx species that have been historically present in Spain. The northernmost records using the name *lobo cerval* or *tigre* fit well with the proposal of Clavero & Delibes (2013) of a historical continuous distribution of the Eurasian lynx in the Atlantic and Alpine regions of northern Spain, and with the data presented by Ruiz-Olmo (2001) suggesting its presence in the Pyrenees up to the second half of the 20th century. However, this assignation is less clear as records are more southern and get closer to the historical range and the environmental requirements of the Iberian lynx (e.g. Cabrera 1914, Rodríguez & Delibes 1990).

One of the most southern records that Clavero & Delibes (2013) assign to the Eurasian lynx correspond to a *tigre* (locally called *lobo corvato*) killed by a shepherd in Ausejo, La Rioja province.

Table 1. Names given to putative lynx in NE Spain, specifying the provinces in which those names were used and its frequency (in parenthesis). Some lynx records contain more than one name.

Spanish name	Provinces
Tigre	Álava (9), Guipuzcoa (2), Vizcaya (2), Castellón (1), Zaragoza (1)
Lobo cerval	Zaragoza (7), Huesca (3), Guipúzcoa (1), Álava (1), Girona (1)
Gato cerval	Álava (1), Navarra (1), Huesca (1)
Lince	Zaragoza (1), Huesca (1)
Lobo corvato	Soria (2)
Tiguere	Álava (1)
Lobo cervate	Zaragoza (1)
Llop cervir	Lleida (1)
Pantera	Álava (1)
Extraño animal	La Rioja (1)

This record was compiled by Zaldívar (2008), who collected it from the works for a geographical dictionary made by Tomás López in the late-18th century. The original text says that the lynx "entered through quite high walls into livestock yards, where, making a terrible kill, settled after with only the heads, leaving untouched the bodies" (*qe entrava por las paredes de bastante altura a los Corrales de Ganados, donde haciendo una terrible matanza, se contentaba dsps con sols la Cabeza de las Reses, dejando intactos los cuerpos*). These observation lead to think of an Eurasian lynx.

Of especial interest are the records compiled by Escuer (2008) in the semi-arid area of Los Monegros, between Zaragoza and Huesca provinces, from the administration book of the hermitage of Santa María de Asteruelas (Perdiguera, Zaragoza province), which conserves instructions of reward payments of 16 "salaries" (*sueldos*) for each large wolf killed, 4 for young wolf (*lobatón*), 2 for fox and 8 for *lobo cerval*. For the 1684-1760 period this archive holds records of animals killed in the Alcubierre Mountains, including 283 large wolves, 798 young wolves and 62 *lobos cervales*. Only for the village of Perdiguera there are payments registered for 26 wolves, 135 *lobatones* and 14 *lobos cervales*. The *lobos cervales* were clearly discriminated in name and price from common wolves and were treated as dangerous, fierce animals damaging livestock, to the point that each killing was paid four times as much as one of a fox. This suggests that these animals could be Eurasian lynx. Surprisingly, its routine hunting (with a specific price) and the large number of killed animals may imply that the species was relatively common. A few decades after the Santa María de Asteruelas records, but in the nearby area of Lanaja (Huesca province), Dieste (1783) reproduces the agreement of neighboring villages to pay 4 silver *reales* for each *lobo cerval* (also called *gato cerval*) killed, again half of the price paid for wolves. Nevertheless, some kilometres to the North in the village of Valpalmas, Alberto Hernando found a payment dated in 1715 of 16 "salaries" (*sueldos jaqueses*) for a *lobo cerval* (Fig. 2), this amount being the same as the paid for wolves in Perdiguera (Escuer 2008), suggesting that being as dangerous as a wolf, it could be an Eurasian lynx.

Two geographically extreme records deserve especial attention. The first one is from Fredes (Castellón province) and appeared in the newspaper *Diario de Tortosa* on August 5th 1888. It describes the sighting of a *tigre* by a priest who saw "a very corpulent animal, unknown for him that in a non-peaceful manner interrupted his way". The animal was also seen by some shepherd. The second and more recent record was generated in Salt (Girona province) in 1923. Massip (2012) provides a copy of the payment of 5 pesetas for the killing of a *lobo cerval*, as identified by a veterinary inspector. If both animals were actually lynx, and maybe Eurasian lynx, the surprise for the sighting (producing newspaper news) and the need for a veterinary inspection suggest that lynx would be extremely rare at that time.

Data presented here suggest that the historical distribution of the Eurasian lynx in Spain was larger than the one proposed by Clavero & Delibes (2013), especially towards the south, being thus closer to the

Figure 2. Receipt of the payment of a reward for the killing of a *lobo cerval* (possibly an Eurasian lynx) in the village of Valpalmas (Zaragoza province), in 1715. (Image provided by Alberto Hernando).

range historically occupied by the Iberian lynx. The new records somehow blur the geographic limits between the two species, including also northern records that plausibly refer to the Iberian lynx. This is the case of the record provided by Zaldívar (2008), informing about a "strange animal" killed in the Cameros Lagoon in 1936, which was some 60 cm in length, fitting well with the size of an Iberian lynx. It is curious to note that 80 years later, in May 2015, the Iberian lynx Kentaro, bred in captivity and released in southern Spain (Montes de Toledo, Toledo province) 6 month earlier, settled temporally in the same area (Cameros Mountains). This animal continued its travel, following the course of the Douro River, to be killed by a car in October 2016 near Oporto, Portugal (*El País*, October 19th 2016). This anecdote suggests that recent (i.e. post-1950) lynx records in the northern half of Spain might correspond to erratic Iberian lynx individuals.

It was already known that the geographic, and even identity limits between the two European lynx species have been very dynamic, not only in recent historical times, but also since the Pleistocene. For example, Rodríguez-Varela *et al.* (2015) provide a molecular identification of Iberian lynx from the Holocene in southern France and from the Pleistocene in northern Italy, in this second case in plausible coexistence with the Eurasian lynx. Yravedra (2005) also refers to both *L. (lynx) spelaea* and *L. pardinus* in the Upper Plesitocene of North Spain. This coexistence would have facilitated hybridization events, such as those documented after the sequencing of the Iberian lynx genome (Abascal *et al.* 2016). The close proximity of Eurasian and Iberian lynxes in historical times suggested by the new records shown here presents a scenario in which recent hybridization events would be possible.

Acknowledgements

We thank Josep Mª Massip for providing old references about lynxes in Catalonia and José A. Godoy for kindly attending our queries on the hybridization between the two lynx species. Miguel Delibes, Javier Calzada and Jordi Ruiz-Olmo provided us useful comments on the manuscript an Alberto Hernando gave us permission to reproduce Fig. 2. Catherine Andrés built the map in Fig. 1.

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Submitted: 23 March 2018
Accepted: 3 September 2018

Associate editor was L. Javier Palomo